Restricted Circulation

This paper is not an official document; it is for information only and reference cannot be made to it in any printed publication without the permission of the author.

Agricultural Memorandum No. 368

Estimation of Early Return to Capacity Dates from July Data

L P Smith

The formula for the chances in 10 of a return to soil moisture capacity before the end of October using the soil moisture deficit at the end of July (D_J inches) is:-

$$4.2 + 0.24R - 2D_J$$

where R = average annual rainfall in inches.

This can be interpreted as:-

Average Annual Rainfall	Basic Return Risk (years in 10)
21	9.2
22	9.5
23	9.7
24	10.0
25	10.2
26	10.4
27	10.7
28	10.9
29	11.2
30	11.4

from which has to be subtracted 2 chances in 10 for each inch of soil moisture deficit at the end of July.
(Figures in excess of 10 count as 10).

The frequency of a very early return (before the end of September) during this 1960-1969 period can be summarized as follows for areas with a rainfall annual average of 30 inches or less

End of July deficit	Chances	
Below 2 inches	6 in 10	(56 out of 90)
2-3 inches	2 in 10	(25 out of 133)
3-4 inches	1 in 10	(14 out of 176)
(but never in areas drier than 23 inches)		
4-5 inches	1 in 20	(3 out of 53)
(but never in areas drier than 27 inches)		

Any comment or critism on this memorandum should be referred to the author.

Meteorological Office
Bracknell
Berks.
February 1971

G. 13088/VT/2/71/60